

wherein:

- 10 a) there are identical oxy, aza or thio groups at the 2- and 8-positions;
b) the phenyl rings in the 5- and 11-positions contain only para-
substituents identical to the oxy, aza or thio groups in paragraph a);
c) the phenyl rings in the 6- and 12-positions are substituted; and
provided that when a single substituent is present on both phenyl rings in
15 paragraph c), said substituent is not a methoxy group located at the para-position.

2. The device of claim 1 comprising a further light-emitting compound to provide a white light emission.
- 20 3. The device of claim 2 further comprising a blue light-emitting compound to provide a white light emission.

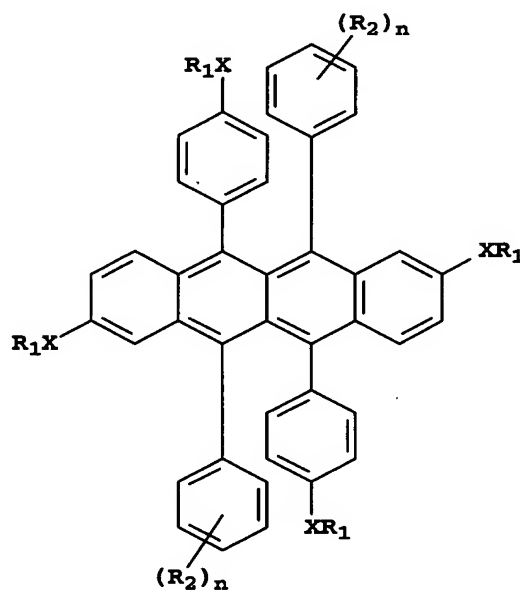
4. The device of claim 2 further comprising a filter over-lying the device.

5. The device of claim 2 wherein the layer comprises a host and dopant where the dopant is present in an amount of up to 10%-wt of the host.

6. The device of claim 5 wherein the dopant is present in an amount of 0.1-5.0%-wt of the host.

10

7. The device of claim 1 wherein the dopant is represented by formula (II):



Formula (II)

15 wherein

R_1 is selected from alkyl, carbocyclic, and heterocyclic groups;

R_2 is a substituent group;

X is oxygen, sulfur or $N(R_3)$ wherein R_3 is selected from alkyl, carbocyclic and heterocyclic groups or taken with R_1 may form a ring;

20

n is 0-5;

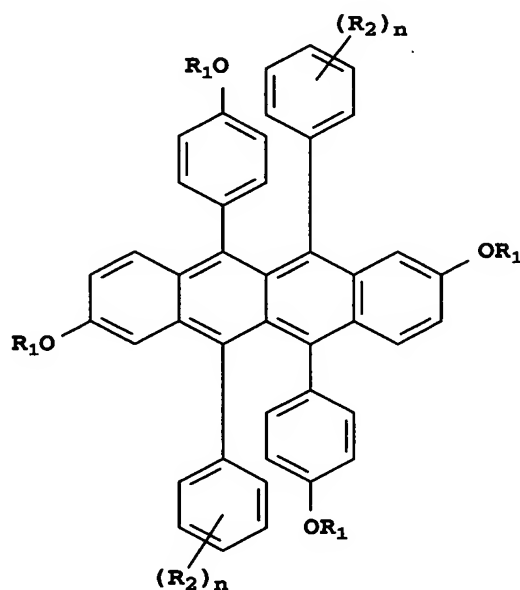
provided that all R_1 groups are the same;

provided further, that the R_2 , their location and n value on one ring are the same as those on the second ring; and

provided still further that when X is oxygen and n is 1, R_2 is not para-methoxy.

5

8. The device of claim 7 wherein the dopant is represented by formula (III):



Formula (III)

10 wherein

R_1 is selected from alkyl, carbocyclic, and heterocyclic groups;

R_2 is a substituent group;

n is 0-5;

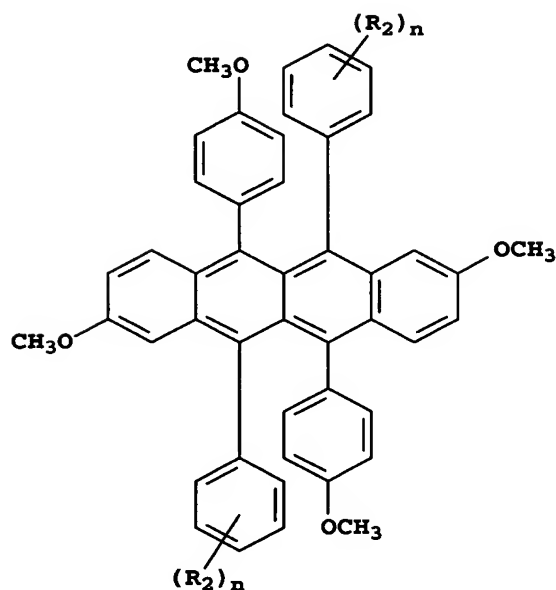
provided that all R_1 groups are the same;

15

provided further, that the R_2 , their location and n value on one ring are the same as those on the second ring; and

provided still further that when n is 1, R_2 is not para-methoxy.

9. The device of claim 1 wherein the dopant is represented by formula (IV):



Formula (IV)

5 wherein

R₂ is a substituent group;

n is 0-5;

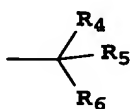
provided that the R₂, their location and n value on one ring are the same as those on the second ring; and

10 provided further that when n is 1, R₂ is not para-methoxy

10. The device of claim 7 wherein R₁ is a carbocyclic or heterocyclic group.

15 11. The device of claim 7 wherein R₁ is an alkyl or aryl group.

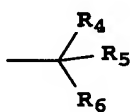
12. The device of claim 7 wherein R₁ is represented by the formula;



wherein each of R₄, R₅ and R₆ is hydrogen or an independently selected substituent.

5 13. The device of claim 12 wherein R₄, R₅ and R₆ taken together may form a mono- or multi-cyclic ring system.

14. The device of claim 7 wherein R₁ is represented by the formula;



wherein each of R₄, R₅ and R₆ is hydrogen or an independently selected substituent with no more than one being hydrogen.

15 15. The device of claim 7 comprising a further light-emitting compound to provide a white light emission.

16. The device of claim 15 further comprising a blue light-emitting compound to provide a white light emission.

20

17. The device of claim 15 further comprising a filter over-lying the device.

18. The device of claim 7 wherein R₂ is located in meta and para
25 positions of the phenyl group.

19. The device of claim 7 wherein R₂ is phenyl.

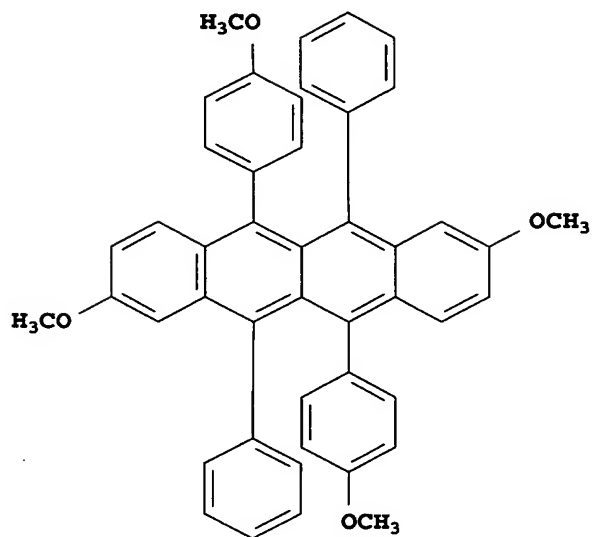
20. The device of claim 7 wherein R₂ is tert-butyl.

30

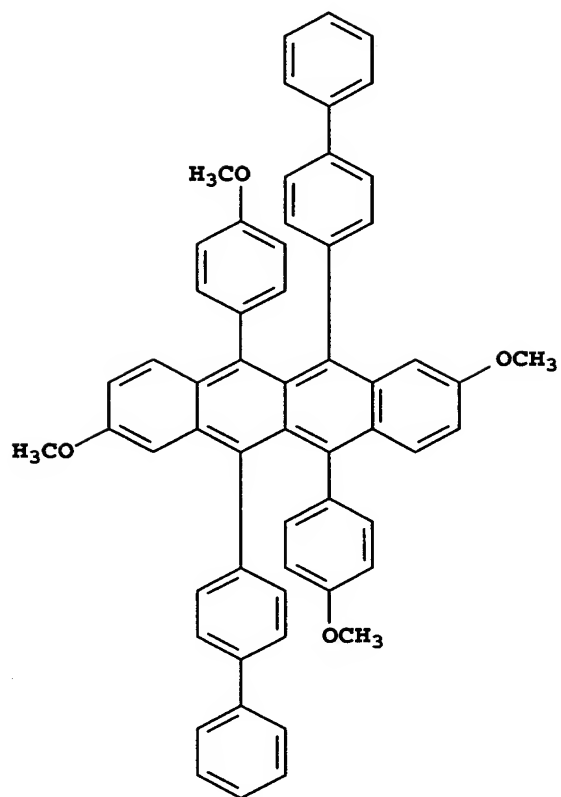
21. The device of claim 7 wherein R_2 is selected from fluorine, trifluoromethyl, pentafluoroethyl and fluorinated-phenyl groups.
22. The device of claim 7 wherein R_2 is a fluorine-containing group.
23. The device of claim 7 wherein R_2 is fluorine.
24. The device of claim 7 wherein R_1 is a fluorine-containing group.
25. The device of claim 1 wherein the host is an amine compound.
26. The device of claim 1 wherein the host comprises *N,N'*-di-1-naphthalenyl-*N,N'*-diphenyl-4, 4'-diaminobiphenyl.
27. The device of claim 7 wherein the substituents are selected to provide an emitted light having an orange-red hue.
28. The device of claim 1 wherein the substituents are selected to provide a reduced loss of initial luminance compared to the device containing no rubrene compound.
29. The device of claim 7 wherein R_2 are independently selected from the group consisting of fluorine, fluorine containing groups, alkyl, aryl, alkoxy and aryloxy groups.
30. The device of claim 7 wherein the layer comprises a host and dopant where the dopant is present in an amount of up to 10%-wt of the host.
31. The device of claim 30 wherein the dopant is present in an amount of 0.1-5.0%-wt of the host.

32. The device of claim 1 wherein the rubrene compound is selected from the following:

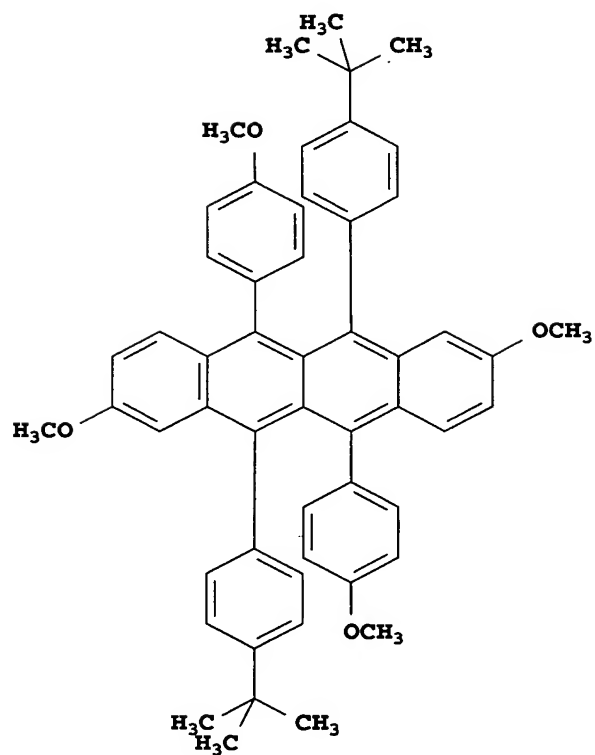
Inv-1



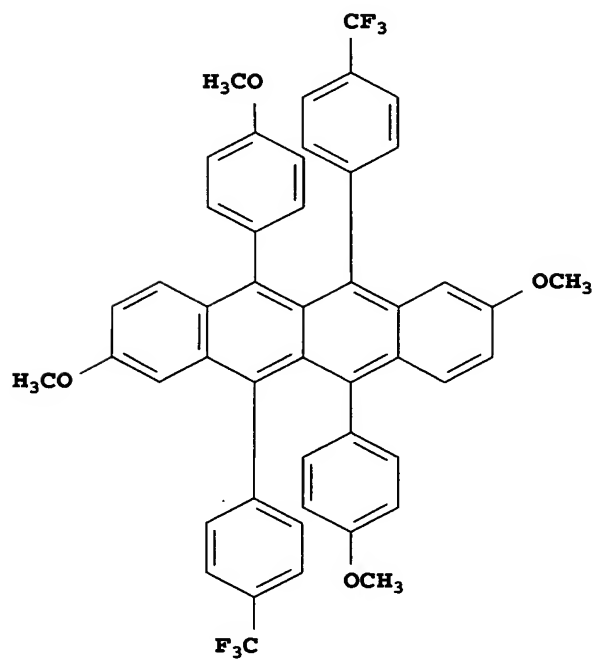
Inv-2



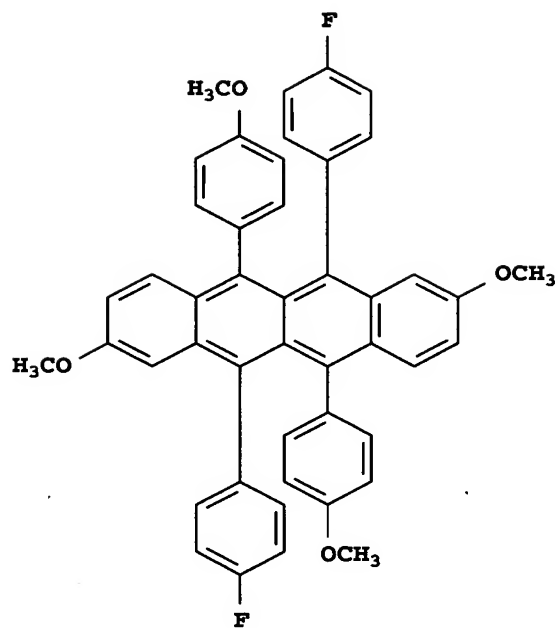
Inv-3



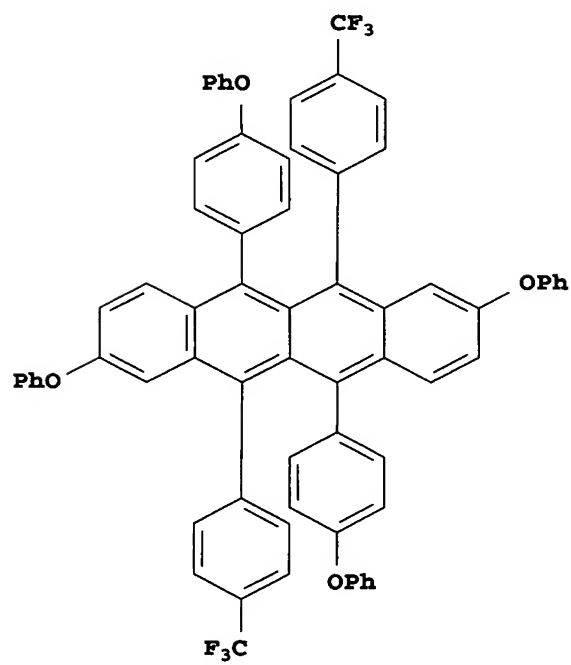
Inv-4



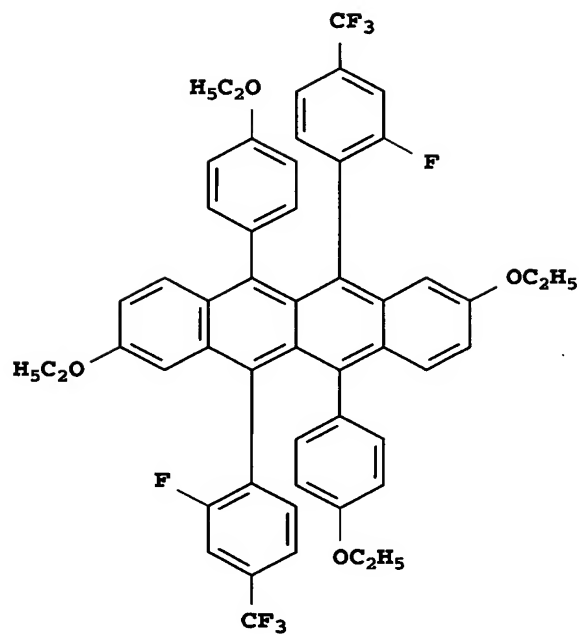
Inv-5



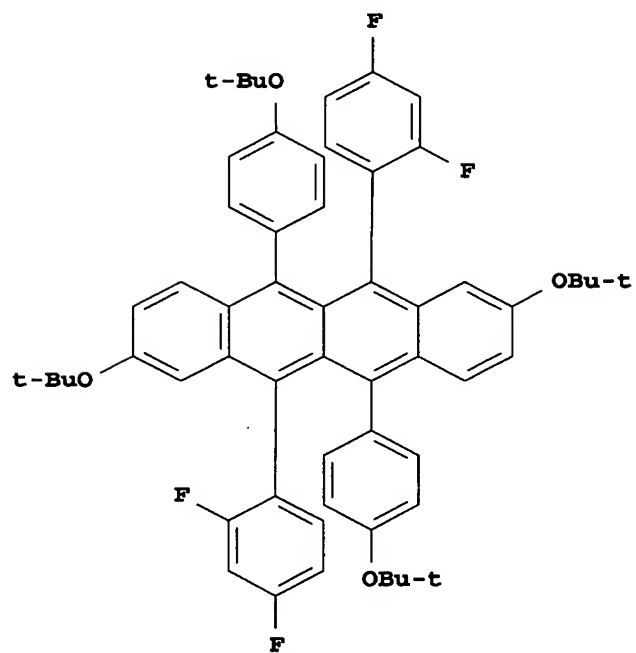
Inv-6



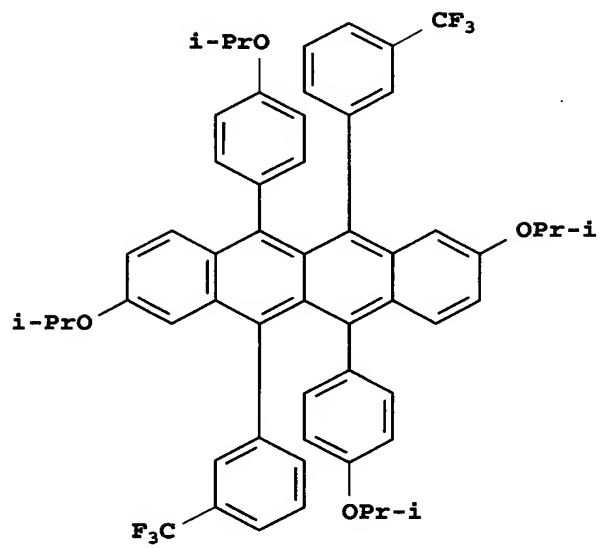
Inv-7



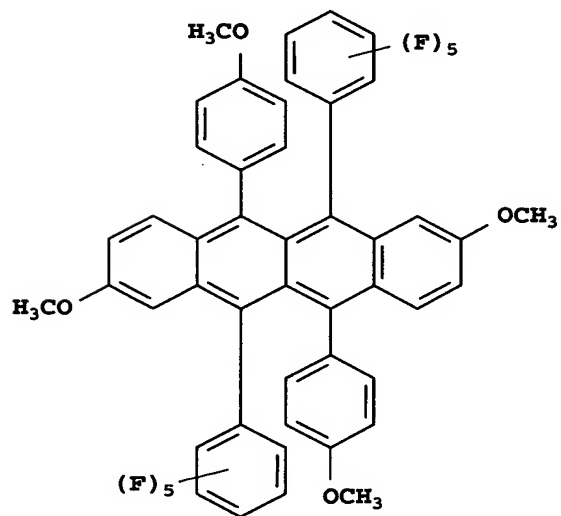
Inv-8



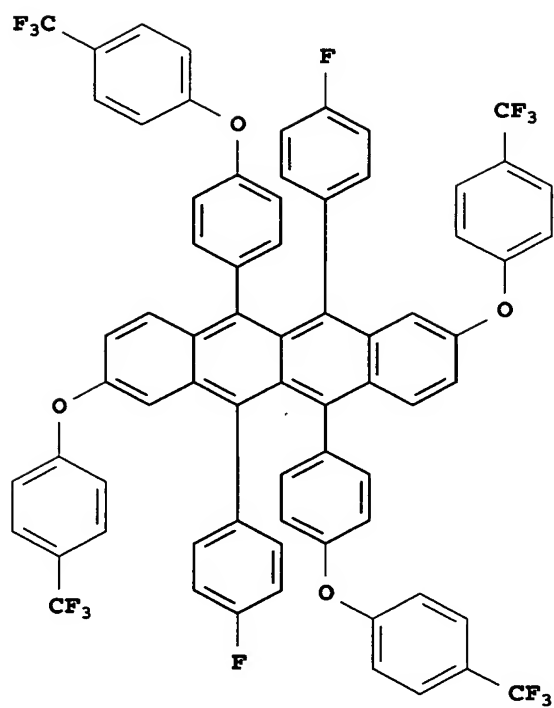
Inv-9



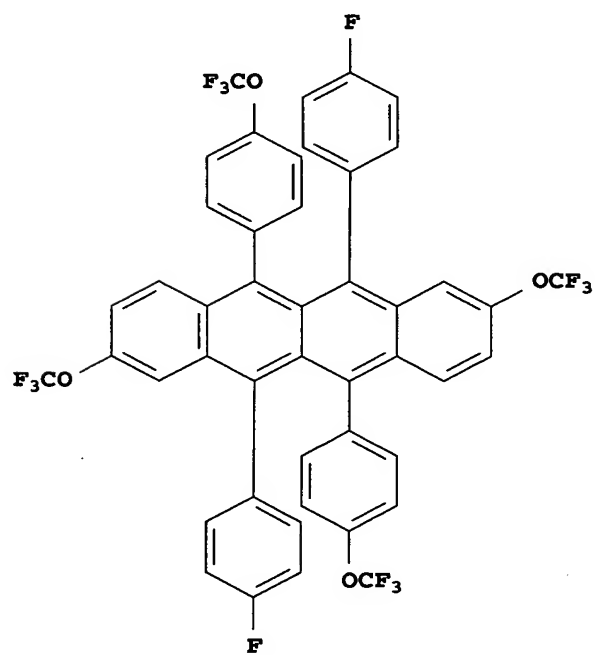
Inv-10



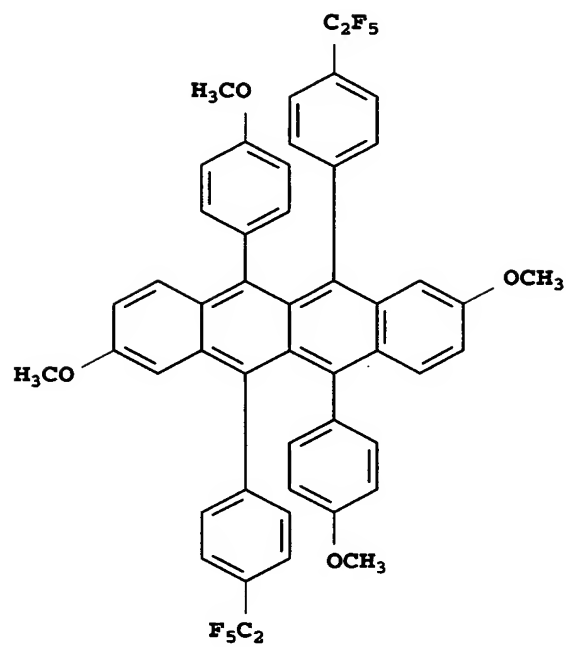
Inv-11



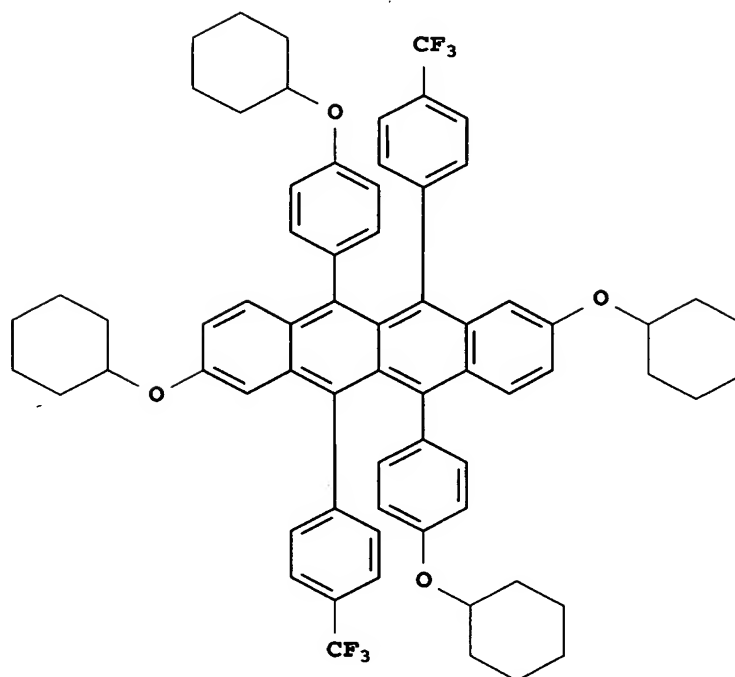
Inv-12



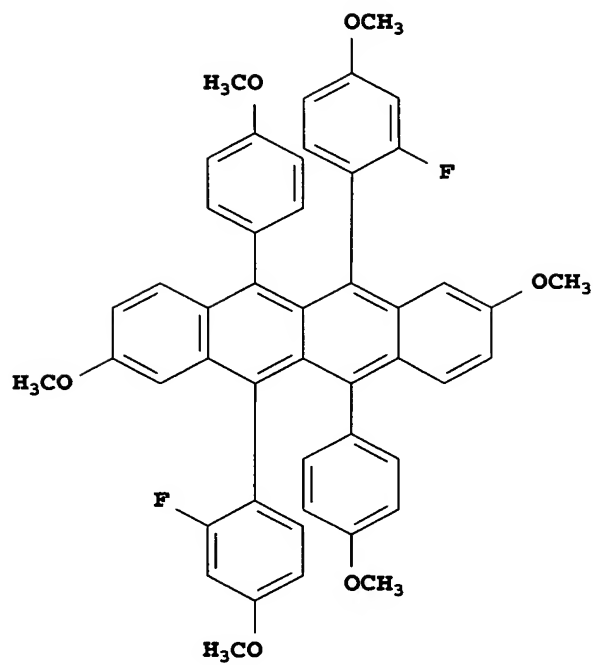
Inv-13



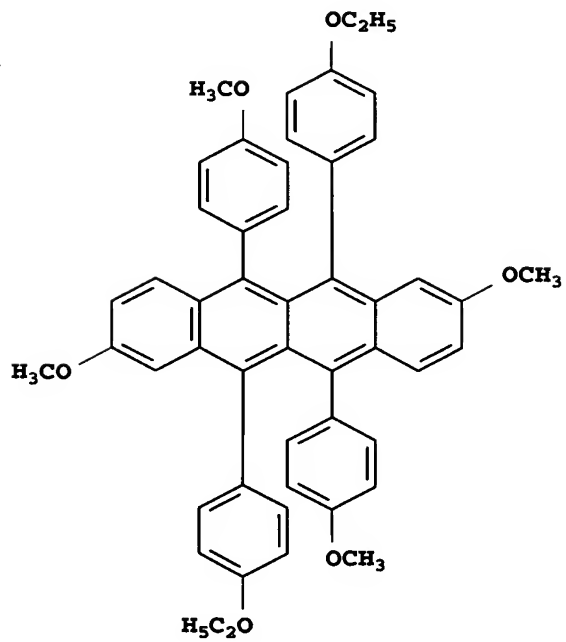
Inv-14



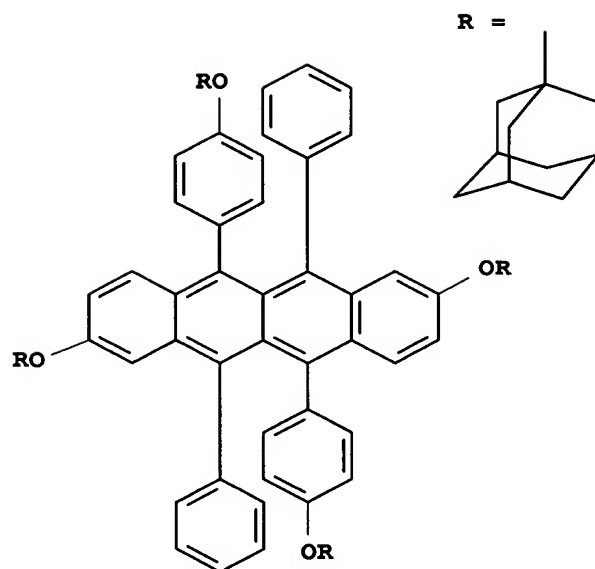
Inv-15



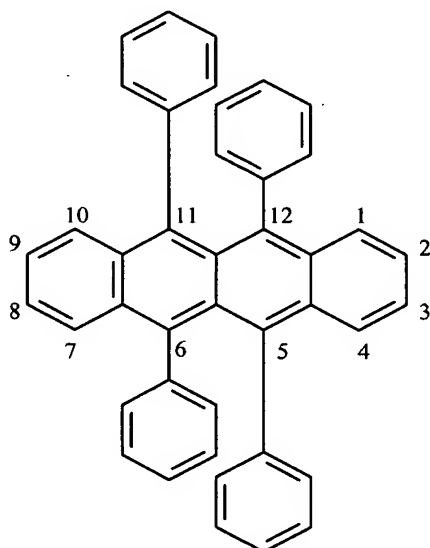
Inv-16



Inv-17



33. An OLED device comprising a light-emitting layer (LEL)
 5 containing a host and an emitting dopant located between a cathode and an anode
 wherein the dopant is an orange-red light emitting rubrene derivative represented
 by formula (I):



Formula (I)

wherein:

- a) there are identical oxy, aza or thio groups at the 2- and 8-positions;
- b) the phenyl rings in the 5- and 11-positions contain only para-substituents identical to the oxy, aza or thio groups in paragraph a);
- 5 c) the phenyl rings in the 6- and 12-positions are substituted or not; and provided that the rubrene derivative has a wavelength of maximum emission (λ_{\max}) in ethyl acetate solution such that $560\text{nm} < \lambda_{\max} \leq 650\text{nm}$ and a wavelength of maximum emission (λ_{\max}) in the EL device such that $570\text{nm} < \lambda_{\max} \leq 650\text{nm}$.

10

34. An OLED device of claim 33 wherein the rubrene derivative has a wavelength of maximum emission (λ_{\max}) in ethyl acetate solution such that $565\text{nm} < \lambda_{\max} \leq 625\text{nm}$ and a wavelength of maximum emission (λ_{\max}) in the EL device such that $570\text{nm} < \lambda_{\max} \leq 650\text{nm}$.

15

35. A light emitting device containing the OLED device of claim 1.

36. A light-emitting display containing the OLED device of claim 1.

20

37. A method of emitting light comprising subjecting the device of claim 1 to an applied voltage.